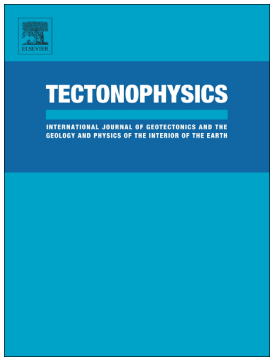

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Lateral spreading of the middle to lower crust inferred from Paleocene migmatites in the Xolapa Complex (Puerto Escondido, Mexico): Gravitational collapse of a Laramide orogen?

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Abstract

Field and laboratory studies including textural, petrological and geochronological analysis of migmatites of the Xolapa Complex affected by the same deformational event suggests that the deformation occurred during crystallization of neosome. The deformation represents sub-horizontal spreading of middle to lower crust according to structural data, and occurred during the Paleocene as inferred from U-Pb laser ablation dating of zircon. According to a compilation of stratigraphic, magmatic and deformational data reported in southern Mexico, the sub-horizontal spreading occurred after the culmination of the Upper Cretaceous Laramide orogeny. Compiled regional data indicate (a) coast-to-coast mass transfer in the upper crust from Zihuatanejo to Veracruz from the Cretaceous-Tertiary boundary until the mid-Eocene; (b) contemporaneous adakite-like magmatism; and (c) extension in the Mixteco and Oaxaca terranes of southern Mexico coeval to compression in the surrounding crust. Because all these observations are spatially associated to areas of the Mixteco and Oaxaca terranes, we propose that these areas experienced a post-orogenic gravitational collapse since the Cretaceous-Tertiary